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Quigley and Hailey Creek Aspen Restoration
Environmental Assessment

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BLM

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1.0 PURPOSE & NEED

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the Quigley and Hailey Creek Aspen Restoration project as proposed by the Shoshone Field Office, Bureau of Land Management (BLM). The EA is a site-specific analysis of potential effects that could result with the implementation of the proposed action or an alternative. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" effects could result from the analyzed actions. "Significance" is defined by NEPA as described in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If the decision maker determines that this project has "significant" effects following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A DR, including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in "significant" environmental effects beyond those already addressed in the 1980 Sun Valley Management Framework Plan (MFP).

1.2 Background

Aspen (*Populus tremuloides*) is an important component of mid- and high elevation sagebrush steppe and forested landscapes throughout the Intermountain West. While stands are often small on a landscape scale, they are important as pockets of vegetative diversity, for providing habitat for a variety of wildlife, and for recreation and scenic values. Over the past century, fire exclusion has led to a decrease in disturbances that in the past have kept aspen stands functioning as a key species across the Wood River Valley landscape. A Fuels/Vegetation inventory was conducted in 1999 through 2004 across the Wood River Valley. The inventory data for aspen stands in the Quigley and Hailey Creek allotments provides evidence that aspen in the area are declining as a result of successional replacement by conifers, low amounts of successful regeneration, and aging overstories. These characteristics are typical of risk factors that have been established to determine the need to restore aspen stands (Bartos and Campbell 1998).

1.3 Need for the Proposed Action

There are approximately 250 acres of aspen within the Quigley and Hailey Creek allotments. Inventory data collected in 1999-2001 shows that much of the aspen communities in these areas are dominated by conifers, have declining overstories, and/or lack successful regeneration. In addition to inventories, recent field inspection has shown this to be true; however, aspen communities lacking conifer are showing improvement in the amount and quality of new regeneration. Aspen issues pertinent to the Wood River Valley have been described and characterized by Bartos and Campbell (1998) as risk factors that aid in identifying need for restoration actions. The risk factors are: 1) conifer cover >25%, including understory regeneration; 2) sagebrush cover >10%; 3) aspen canopy cover < 40%; 4) dominant trees are > then 100 years of age; and 5) < 500 stems per acre of aspen regeneration between 5 and 15 feet tall. These five risk factors emphasize the importance of structural components and ecological processes that are needed in order to maintain aspen on the landscape.

Out of the approximate 250 acres of aspen within the Quigley and Hailey Creek allotments 70 acres has at least 25% conifer cover and an additional 80 acres has measurable amounts of conifer. In these areas conifers are becoming the dominate canopy species, overtopping the aspen and reducing the amount of sunlight and water available to aspen. This has reduced the ability of aspen communities to maintain thriving canopies as well as their ability to allocate sufficient energy to new regeneration.

Out of the remaining 100 acres of aspen, approximately 30 acres have declining overstories and areas of low successful regeneration; the other 70 acres are in a relatively healthy condition. Within this 100 acre area, 1999-2001 inventory data has shown the average aspen canopy cover to be 39% with a range of 24% to 50%. Additionally, there are breaks in stands where there is no canopy cover and areas that once were occupied by aspen have been invaded by sagebrush.

1.4 Purpose(s) of the Proposed Action

The BLM, Shoshone Field Office proposes to restore aspen and aspen mixed conifer communities within the Quigley and Hailey Creek allotments by protecting aspen regeneration and returning disturbance regimes that historically have favored aspen communities and promoted their function as a key species on the landscape. The proposed action and action alternatives would consist of treatments that would meet treatment objectives to1) remove competing vegetation, 2) stimulate regeneration by root suckering, 3) protect aspen regeneration from domestic and wild ungulate browsing and 4) set up monitoring procedures.

1.5 Conformance with BLM Land Use Plan

The proposed project area occurs in the Big Wood Analysis unit managed under the Sun Valley MFP. The proposed project conforms to the MFP by addressing the following management decisions:

- Forest Products Decision Number 1**. I**ntensively manage forested areas that are capable of producing wood products.

- Watershed Decision Number 1**.** Protect and maintain vegetation in order to reduce excessive erosion and to apply techniques that would minimize compaction and disturbance to soils.

- Wildlife Decision Number 1. Provide for forage of big game animals.

- Wildlife Decision Number 3. All crucial deer and elk ranges will be managed for the needs of the animals, within allocation limits. Vegetation manipulation, including timber harvests, will only be done where there are minimal adverse impacts on the crucial habitat.

- Rationale: Although the proposed action and alternatives are not specifically mentioned in the MFP, they are consistent with objectives, goals, and decisions described above.

The Sun Valley MFP was amended by the Fire, Fuels and Related Vegetation Management Direction Plan Amendment (FMDA) (2008). The proposed project will directly contribute to meeting the objectives and goals set by this plan amendment. The following objective and related goals are relevant to the purpose and need addressed in this Environmental Assessment:

- Move all vegetation types toward Desired Future condition
    - Increase acres of early-seral and mid-seral Aspen/Conifer and Dry Conifer cover types (pure aspen and Aspen/Conifer mix). Spatial arrangement of varying age-classes should occur in a mosaic across the landscape.
    - Improve composition and structure of the Aspen/Conifer and Dry Conifer cover types

1.6 Relationship to Statutes, Regulations, or other Plans

The 2005 Twin Falls District Fire Management Plan (FMP) also identifies priorities and objectives for the project area as part of the Wood River Fire Management Unit (FMU).

- Fuels Treatment Priority 1. Treat north and east aspects with prescribed fire to improve health of aspen and Douglas-fir and re-establish fire as a natural process.

- Fuels Treatment Priority 2. Reduce hazardous fuels that pose risk to sage-grouse habitat and wildlife areas of concern.

1.7 Identification of Issues

Issue 1: Wildlife including migratory birds

The project area provides habitat to a variety of wildlife including gray wolf, Canada lynx, and other BLM sensitive species. Additionally, the Idaho Department of Fish and Game has identified a large portion of the Quigley Creek area as crucial year round habitat for mule deer and elk. The proposed activities may alter habitat for wildlife species.

Issue 2: Livestock grazing
Livestock grazing may be impacted as protection of natural resources may require restrictions to livestock use within the project area after treatments have been implemented.

Issue3: Invasive Non-native species
There is a potential for Canada thistle, diffuse knapweed, and spotted knapweed, all listed noxious weeds, to occur within the project area. Disturbances to soils from mechanical removal of vegetation and/or the use of prescribed fire has the potential to increase existing noxious weed populations as well as allow new weeds to become established.

Issue 4: Vegetation including Special Status Species
The proposed project area contains potential habitat for obscure phacelia and least phacelia, both BLM Sensitive plants. Also, the proposed action and action alternatives propose altering current vegetation and therefore has the potential to impact these vegetation communities.

Issue 5: Soils
Temporary removal of vegetation and the means in which the vegetation is removed may have impacts to soil structure, soil microorganisms, and erosion potential.

Issue 6: **Air Quality**
The proposed action and alternatives would use burning as a means of reducing fuel loadings and promoting aspen regeneration. Burning would release smoke into the air and would potentially impact air quality over a short period of time.

Issue 7: Fuels and Fire Management
The proposed action and alternatives have the potential to change fuel loading and structure. These changes would potentially have an impact on fire behavior and fire severity. Additionally, alternatives that propose using prescribed fire as a tool to meet objectives would affect how fires are managed within the project area.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction
Alternative A (the proposed action), Alternative B, and Alternative C are treatment prescriptions that have been designed to meet the purpose and need while at the same time bounding themselves within limits set by logistics, funding, risk, and public input. Each alternative was developed based on issues identified through internal interdisciplinary team meetings. The alternatives were designed to address one or more of the identified issues as well as provide the opportunity for specific comparisons on which the decision maker can base a decision.

Management Restrictions as described in the FMDA (2008) will be applied as part of the proposed action and other action alternatives. “Management Restrictions are intended to prevent significant impacts to natural resources and to meet current BLM, state, and federal policy”

(FMDA ROD, p. 9). Additionally, all action alternatives would include the implementation of the monitoring strategy as described in the proposed action alternative.

2.2 Alternative A – Proposed Action

The proposed action is a set of treatments that aim at preserving aspen communities on the landscape in a condition that will be able to react to a wildfire as they would have in the past. It is not a treatment that will directly restore aspen communities to their historic distribution and structural pattern, but implementing these treatments will allow future disturbances to effectively do so. The proposed action would implement a variety of treatment types in specified areas, would specify areas where no immediate treatment would occur, and would use the identified monitoring strategy to measure treatment results. Under the proposed action the majority of the area would be treated using the following three treatment categories:

1) Encroaching conifers would be lopped and scattered on 107 acres
2) There would be 43 acres where conifers are piled and burned, and
3) Small areas would have competition removed around isolated aspen within 230 acres of Dry conifer stands

In addition to these treatment categories the following types of treatments would be used to meet the purpose and need as well as to gain information and/or reinforce our current knowledge on how declining aspen respond to different treatments. These treatments would be:

1) A 5-acre treatment that would have conifers removed and a protective buck and pole fence placed around the remaining aspen. In order to accomplish this, 50 acres of conifer surrounding these aspen areas would be thinned from below to provide the material for the buck and pole fence as well as reduce competition and ladder fuels.
2) A 2-acre area would have declining aspen overstory felled and broadcast burned, and then will have a chemical browse protection agent e.g. *Hot Sauce* or *Deer Away* applied to aspen regeneration.

Appendix 1 provides figures that specifically identify locations for the proposed actions.

The proposed action for the 107 acres shown in Figure 1 is to remove encroaching conifers that are in the understory and becoming dominant in the overstory. However, dominant trees that are greater than 24 inches in diameter at breast height (DBH), exhibit fire scars, or have obvious wildlife use would not be removed. Encroaching conifers would be removed by felling each tree with a chainsaw, cutting it into manageable pieces, and then scattering it through the stand. Stumps would be cut as flush with the ground as possible, but would not exceed a one foot height above ground on the up-slope side. Also, a minimum of three sides of each tree would be de-limbed so that none of the cut tree exceeds a two foot height above the ground surface. While scattering slash through the area crews will maintain slash accumulations to less than two feet in depth and less than 30% ground surface cover. Crews will ensure that slash is scattered in a discontinuous manner throughout the project site so that it is not in piles or windrows. Additionally, boles and tops would be cut so that they lie flush with the ground. In the event that treatment within these areas lead to slash accumulations that cannot be maintained as described

above small portions, less the 1/2 an acre in every 10 acres, of the area would be treated as described for areas shown in figure 2.

The proposed action for the 43 acres shown in Figure 2 is to remove conifers that currently dominate the overstory and are regenerating in the understory. These trees would be removed in approximately 1-2 acre patches within the treatment areas; the patches would be separated by a minimum of 150 feet. These patches would be identified by resource specialists during the layout of the project or during actual implementation and would use topography, variations within stands and resource protection to direct each of the patch's location. Within these patches, conifers would be felled and cut into pieces. Smaller manageable pieces would be hand piled and larger pieces would be left as coarse woody debris and would be placed so that they inhibit browsing on aspen regeneration where possible. Again, any conifers within the patches that are greater than 24 inches DBH, exhibit fire scars, or have obvious wildlife use would not be removed. Additionally, crews would leave three or more snags per acre at least 10 inches DBH and 25 feet tall; preferably these snags would exist in groups. The piles would be located so that they do not impact reserved trees and would promote aspen regeneration. The piles would also not be greater than 10 feet wide and be separated by a minimum distance of 20 feet. The piles would be left for approximately one year to cure prior to burning. Each pile would be adequately protected from moisture prior to the beginning of the fall rainy season and then burned while adjacent areas are covered with snow or are otherwise determined unlikely to burn. All burning applications would be done in accordance with an agency approved prescribed fire plan that adheres to smoke dispersal requirements and maintains firefighter and public safety. It is not likely that any fire control lines would be needed, but in the event control lines are deemed necessary they would be cleared by interdisciplinary team specialists prior to construction and would be reseeded with perennial grasses, e.g. bluebunch wheatgrass (*Pseudoroegneria spicata*), and be monitored along with burned area for noxious weeds and treated accordingly.

For the areas shown in figure 3, the proposed action is to grid the conifer stands to look for isolated areas where there may be only a few living aspen stems. In these areas all conifers would be removed within a 50 foot radius; however, only 3 of these areas would be cleared per every 2 acres. The trees would be felled so they enclose small areas that would serve to protect aspen regeneration, however, the trees would still be de-limbed and the limbs would be scattered as described in the treatment for areas in Figure 1. There would be a total of 230 acres gridded for isolated aspen with a maximum area of 20 acres to have conifer removed.

The proposed action for the areas shown in Figure 4 is to remove all encroaching conifers from the designated aspen communities (although, leaving 24 inch DBH and bigger trees, trees with fire scars and snags with obvious wildlife use) and thinning the surrounding conifer area to extract pole sized logs. These poles would be used to construct buck and pole fence that would enclose these areas. The buck and pole fences would be maintained until monitoring data show that there is a minimum of 250 aspen saplings per acre with heights between 5 and 15 feet, after which the fence would be allowed to deteriorate naturally as damages such as windstorms causing blow down or wildfire occur. Conifers in aspen communities would be treated much like that described above. However, the limbs and tops would be removed from the bole and the majority of the boles would be removed to be used to construct the buck and pole fence and the limbs would be treated following the same criteria as in lop and scatter treatments. Additionally,

where possible there would be a minimum of 150 linear feet of downed logs greater than 10 inches left per acre within the aspen stands. In addition to using the boles of the conifers removed from the aspen stands, material for the buck and pole fence would also come from adjacent conifer stands that are thinned from below. These trees would be felled and delimbed with chainsaws and the branches would be scattered, following above criteria for scattering material. There would be a minimum spacing of 35 feet for reserve trees and they would be dwarf mistletoe free dominate or co-dominate trees. Between 800 and 1000 trees 5 to 10 inches DBH would be thinned from a 50-acre area. The thinned trees would be moved to the aspen stand boundary either by hand or using chainsaw mounted winches. When using the winches, trails created would be perpendicular to the slope as much as possible and these trails would avoid converging at the same point when they are created down slope. Landing areas would be spread along the aspen boundary to distribute the material evenly. Once the materials have been collected, the fence would be constructed entirely on site, the fence posts (bucks) would sit on top of the ground, requiring no digging and there would be a minimum of one gate per enclosed area. In all there would be 3 enclosed areas resulting in approximately 3,200 feet of fence enclosing approximately 5 acres. (These measurements are approximate as the fence perimeter would use natural terrain and stand borders to be most effective and may need to be adjusted while in construction.)

The area shown in Figure 5, totaling 2 acres and adjacent to a healthy aspen stand, would have the declining aspen overstory felled and then would be broadcast burned. Burning would be accomplished in either late fall or spring when it is unlikely that fuels outside the area would actively burn. Hand-built control lines would be used where needed with prior clearance from resource specialists. This area would be monitored for aspen regeneration, and if no regeneration occurs then artificial regeneration using seedlings grown from root and stem cuttings from the neighboring stand would be planted at no more than 20 foot spacing. Regardless of the type of regeneration ultimately established, it will be sprayed with a repellant to reduce the amount of browsing by deer and elk. This type of protection would occur in the late spring and fall and would occur through a minimum of the first 2 growing seasons. Additionally, this area would be restricted from livestock use until monitoring data indicates that there is a minimum of 250 aspen per acre between 5 feet and 15 feet in height.

The approximate 100 acre area shown in Figure 6 identifies areas that there would be no immediate treatments implemented. These areas were originally identified by inventory data to be lacking regeneration and although these areas may not currently meet the >500 stems per acre of aspen regeneration between 5 and 15 feet tall as recommended by Campbell and Bartos (1998) they are showing improvement in the quality and quantity of regeneration. Although no treatments would be implemented, these aspen stands would be monitored along with treated areas to provide comparative data and to continually assess aspen health.

2.3 Alternative B – Broadcast Prescribed Fire across Mechanically Treated areas.
Alternative B is a set of treatments that will effectively restore aspen communities to their historic distributions and structural pattern when the treatments are completed. This approach would allow the aspen communities to be maintained in functioning condition without depending on the occurrence of a wildfire or other natural disturbance. Under Alternative B the 105 acres shown in Figure 7 would have encroaching conifers removed from aspen communities and 5

acres of Dry conifer stands will be thinned following the design for mechanical lop and scatter treatments discussed in the proposed action. Additionally, 250 acres including these mechanically treated areas and areas surrounding them would be broadcast burned. A burn plan would be developed so that the prescribed fire would result in a pattern that consumes the majority of the fuels created by the mechanical treatments and also creates (or maintains) a diversity of structural/seral stages that more closely resembles the desired future condition as outlined in the FMDA. The prescribed fire treatments would most likely be implemented in early-mid fall, but could potentially be implemented in mid- to late spring. In order to implement prescribed fire in these areas there would need to be approximately 5.5 miles of fireline constructed prior to burning. These lines would have vegetation removed to expose bare soil and would be from 2 to 10 feet wide depending on the surrounding vegetation. Where control lines run through forest vegetation additional prep work such as thinning and brush removal up to 50 feet from the control line will also be utilized to maintain fire behavior. This effort is needed so the prescribed fire can be kept within burn perimeters safely. The thinning and brush removal would consist of removing ladder fuels and increasing crown spacing. The fuels created by this prep work would be distributed through the area or removed so that they do not contribute to fire behavior. In addition to control lines, water would also be used during prescribed fire operations to hold the fire within perimeters; the water may be delivered by aerial resources, engines, and/ or with a portable pump and hoses (hose lay).

After the prescribed fires have been implemented, all firelines would be reseeded with perennial grasses and forbs. Firelines would be monitored and treated for weed infestations. Treatment of any noxious weeds would be in conformance with the *Final Programmatic Environmental Impact Statement Vegetation Treatments using herbicides on Bureau of Land Management Lands in 17 Western States (2008)*. Also, under this alternative livestock grazing will be restricted on all burned areas until monitoring data indicates there is a minimum of 250 aspen per acre between 5 feet and 15 feet in height within currently designated aspen communities and sagebrush steppe communities have recovered. Sagebrush steppe communities will be considered recovered using the same criteria as used after Emergency Stabilization and Rehabilitation (ESR) treatments. These criteria as presented in the 2005 programmatic EA for the Shoshone and Burley Field Offices Normal Fire Rehabilitation Plan are 1) the bare mineral soil is within 10% of what would be expected for the site (based on ecological site descriptions), 2) the majority of desired herbaceous perennial plants are producing seed, and 3) the plants must also have developed root system extensive enough to provide for soil stabilization and prevent uprooting when grazed especially when soils are moist.

2.4 Alternative C – Mechanical Treatments without the Use of Broadcast or Pile Burning

Alternative C is a treatment that considers public input that expressed the concerns of the impacts of fire use. Alternative C is similar to the proposed action in its implementation but, the treatments would not have the same outcome and would result in different impacts. Alternative C would mimic the proposed action, but would not include the use of burning to reduce the fuels created during the conifer removal process. Therefore, areas that are identified in the proposed action to be piled and burned (Figure 2) would have overstory and understory conifers felled, de-limbed, and scattered as much as possible, but because of the amount of encroaching conifers present would ultimately be left as heavy areas of slash. Additionally, the 2 acres of declining aspen community (figure 5) would have the overstory felled and left, but there would be no

subsequent broadcast fire used relying solely on mechanical treatments to stimulate aspen regeneration.

2.5 Alternative D – No Action

There would be no aspen restoration treatments implemented within the project area. Given the past history, vegetation communities will continue with succession toward late seral stages.

2.6. Alternatives Considered but Eliminated from Detailed Analysis

Wildland Fire Use (WFU) - The FMDA determined that Aspen/conifer, Dry Conifer, and additional vegetation groups in the project area are suitable for WFU. However, given the layout of land ownership, the occurrence of fire starts, the potential for habitat loss, and other resource conflicts it was determined that WFU would not be able to meet the purpose and need of the proposed aspen restoration within adequate timelines and/or without impacts to other property owners.

2.7 Monitoring

All the areas shown in the figures identified above, treated and untreated, would be monitored following the Idaho BLM 2007 Monitoring Strategy and a combination of methods described in Jones, et.al. (2005) in Effectiveness Monitoring of Aspen Regeneration on Managed Rangelands, the Twin Falls District Fuels Inventory/Monitoring Metadata, and in the Shoshone and Burley Field Office Normal Fire Rehabilitation Plan. Each treatment area would be monitored to determine if treatments are being applied as described (implementation monitoring) and to determine if the applied treatments are meeting restoration goals and objectives (effectiveness monitoring). The monitoring design would include the following steps (steps 1-3 are incorporated in the development of the proposed action): 1) develop resource objectives; 2) stratify land by treatment type; 3) for each treatment type identify current status and management need; 4) select monitoring intensity, indicators, techniques ,and frequency; 5) select monitoring locations; 6) collect implementation data; 7) collect effectiveness data; 8) analyze and evaluate all data, including pre treatment inventory; 9) apply adaptive management to areas with similar needs; and 10) repeat long term effectiveness monitoring and continue to apply adaptive management.

Implementation monitoring would be carried out daily by the project lead if accomplished with BLM employees or volunteers. If the treatments are accomplished under contracting authorities then implementation monitoring would be the duties of the Contracting Officers Representative (COR) or the Project Inspector (PI). Effectiveness monitoring would be accomplished in the 1st 2nd, 5th, and 10th years after the treatment is accomplished. The effectiveness monitoring will be a combination of qualitative and quantitative data that would measure fuel characteristics, canopy and understory cover, tree size, tree distribution, and aspen utilization. The data will be collected by BLM inventory/monitoring crews and then will be summarized and compared to the 1999-2004 inventory data. Specific elements that will be compared will be changes in species richness, vegetation cover, aspen regeneration, fuel loadings, and vegetation structure. Additionally, crews would visually assess disturbed areas for the presence of noxious weeds. Each year the treatment areas are monitored a report would be developed to include general evaluation of the treatments effects and if treatment objectives have been achieved.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents the affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the proposed project area as identified by interdisciplinary review. This chapter provides the baseline for comparison of potential effects described in Chapter 4.

3.2 General Setting

The proposed project area is in the forest and woodland communities within the Quigley and Hailey Creek allotments of the Shoshone Field Office. These forest and woodland communities are located approximately seven miles northeast of Hailey, Idaho. This area has elevations ranging from approximately 6,000 feet to 7,500 feet and represents an interface between montane forest and sagebrush steppe ecosystems. The climate of the area is characterized by warm, dry summers and cold, wet winters. The majority of precipitation occurs from November through June with the average annual precipitation being between 15 and 20 inches. The annual average maximum temperature is 57° F, but varies between 30° and 83° F throughout the year (data from Western Regional Climate Center Hailey, http://www.wrcc.dri.edu). The vegetation within the project area differs widely with aspect, slope, elevation and anthropogenic boundaries. Cooler north and east aspects support Dry Douglas-fir communities with Aspen/Conifer forest communities occurring lower in drainages and in patches across the slopes where environments allow aspen to occur. Stable aspen communities will occur both above and below the Aspen/Conifer forest types in transition areas between forest and sagebrush communities and along drainage corridors; these sites are generally too dry to support conifers. South and west aspects and rocky ridge lines support low sagebrush and mountain big sagebrush communities.

3.3 Resources Affected by the Proposed Action or Alternatives

During the analysis process, the interdisciplinary team considered several resources and supplemental authorities. The interdisciplinary team determined that the resources discussed below would be affected by the proposed action. The project file contains the complete list of resources and supplemental authorities that were considered and the reasons why other resources were not analyzed in detail.

3.3.1 Wildlife

The United States Fish and Wildlife Service (USFWS) current listed species list (File #: 14420-2008-SL-0519), the Idaho Department of Fish and Game (IDF&G), and the Idaho Conservation Data Center's (ICDC) database (http://fishandgame.idaho.gov/cms/tech/CDC) were reviewed for the project area and they revealed that both federally listed, state imperiled, and BLM sensitive animal species should be considered in the planning of the current project. Additionally, the Shoshone Field Office (SFO) resource maps, associated datasets, and environmental documents were reviewed to obtain additional information on the distribution of wildlife species and habitat requirements within the SFO administrative boundary.

The Idaho CDC collects, analyzes, maintains, and disseminates scientific information necessary for the management and conservation of Idaho's biological diversity. Digital computer files are

used to document occurrences of federally Threatened and Endangered species, federal candidates for Threatened and Endangered status, Idaho Department of Fish and Game Species of Special Concern, Bureau of Land Management Sensitive Species, U. S. Forest Service Sensitive Species, and Idaho Native Plant Society ranked species. Information from the IDCDC database is available to all users and provides information on Idaho's rare species.

The occurrence of wildlife species is closely linked with the habitat types present. The vegetation communities that exist in the project area are a mix of sagebrush steppe and forest communities, with the predominate vegetation being sagebrush steppe. A list of federally listed and BLM sensitive species that are associated with the habitat types present is available in the project file.

Gray wolves (*Canis lupis*) are the only USFWS federally listed (List #2008-SL-0124) animal species that could occur within the project area. Currently, wolves in Idaho are listed as endangered under the Endangered Species Act (ESA), but are considered a non-essential, experimental population. Thus, they are managed under the Nonessential, Experimental Population (10j Rule) (http://fishandgame.idaho.gov/cms/wildlife/wolves/esa/2005_10j.pdf).

An active breeding pack, the Hyndman pack, is well documented and occurs about 5-7 air miles north of the project area. Additionally, numerous individuals have been observed and recorded by both Idaho Department of Fish and Game (IDF&G) and the Conservation Data Center (CDC) in the area.

BLM Type II Sensitive Species that utilize habitat types present within and adjacent to the project area are: greater sage-grouse, pygmy rabbit, Canada lynx, and bald eagle.

The USFWS is currently reviewing the status of the greater sage-grouse (*Centrocercus urophasianus*) to determine if the species warrants protection under ESA throughout its range or any significant portion of its range (Federal Register Notice: 73 FR 10218). Until the comment period has ended and FWS has made a decision, BLM manages sage-grouse as a Type II species, and follows guidance found in Conservation Plan for the Greater Sage-grouse in Idaho (Idaho Sage-grouse Advisory Committee, 2006). IDF&G maintains and manages both the habitat classification as well as the lek database for sage-grouse, and CDC provides element occurrence information. These resources are available to BLM biologist to aid in the management of the species and their habitat.

Greater sage-grouse are dependent on large areas of sagebrush/grassland habitats with 15-25% sagebrush canopy cover for breeding habitat and 10-30% canopy cover for winter habitat. A healthy perennial grass and forb understory is also an important component of nesting and brood-rearing habitat (Idaho Sage-grouse Advisory Committee, 2006). The availability of a diversity of forbs rich in calcium, phosphorus and protein are also important to pre-laying hens (Connelly et al. 2000). Furthermore, sagebrush habitats which contain the structural components and habitat diversity necessary to meet the life cycle needs of sage grouse are also likely to provide suitable habitat conditions for other sagebrush obligate species.

Currently, sage-grouse habitat has not been identified for the area, and there are no recorded leks (breeding/strutting grounds). There are large areas of 'key' habitat and active leks approximately 2 miles east of the project area. The majority of the areas topography is likely too steep for birds to breed; however, the area does provide suitable winter habitat.

In January, 2008, the USFWS found that the petition to list pygmy rabbit (*Brachylagus idahoensis*) presented substantial scientific or commercial information indicating that listing the pygmy rabbit may be warranted (Federal Register: Vol. 73, No. 5). Therefore, they initiated a 12 month status review to determine if listing the species is warranted. In the meantime, BLM manages pygmy rabbit as a Type II sensitive species.

Pygmy rabbits are typically found in areas that include tall, dense stands of sagebrush (*Artemisia spp.*), and are highly dependent on sagebrush to provide both food and shelter throughout the year. During winter months the rabbits' diet consists of up to 98 percent sagebrush. In the summer and spring months, their diet becomes more varied, including more grass and new foliage. The pygmy rabbit digs its own burrows, which are typically found in deep, loose soils. However, pygmy rabbits occasionally make use of burrows abandoned by other species and, as a result, may occur in areas of shallower or more compact soils that support sufficient shrub cover.

Suitable pygmy rabbit habitat was identified within the project area in a Geographic Infromation System (GIS) modeling effort in 2005 (Rachlow and Svancara). However, similar to sage-grouse, the slopes are thought to be generally too steep for pygmy rabbits to dig their burrows. Further, there are no CDC observations of pygmy rabbit in the area on record.

Bald eagles (*Haliaeetus leucocephalus*) were removed from the USFWS threatened and endangered species list via Federal Register: July 9, 2007 (Volume 72, Number 130). The FWS determination is based on a thorough review of all available information, which indicates that the threats to this species have been eliminated or reduced to the point that the species has recovered and no longer meets the definition of threatened or endangered under the Act (Federal Register; volume 72, number 130). Thus, the eagles are now a BLM Type II sensitive species (these are species designated as FWS candidate or are ranked by the Natural Heritage program network as globally rare to critically imperiled). Bald eagles inevitably pass through the project area and may forage, but spend most of their time in the riparian areas along the Big Wood River drainage.

The vegetation types present provide habitat for numerous species of birds. Both resident and migratory birds utilize the area for breeding, nesting, brood rearing, and wintering. Three shrub steppe species are also BLM sensitive: Brewer's sparrow, sage sparrow, and loggerhead shrike. Further, the neotropical migrants that breed in the area are protected from take under the Migratory Bird Treaty Act (http://www.fws.gov/laws/lawsdigest/migtrea.html).

Mule deer and elk use occurs year-round with a greater level of occurrence in the spring and summer. The project area in the Quigley Gulch allotment has been identified by IDF&G as crucial year round deer and elk habitat, and areas directly adjacent to the project area in the Hailey Gulch allotment are also crucial year round habitat.

3.3.2 Livestock Grazing

Quigley Allotment: Currently, there are a total of 90 sheep AUMs permitted to 2 permittees with a beginning date of June 1st and an ending date of November 1st. The permittees use the Quigley Allotment as a trailing route to and from the US Forest Service Lake Creek Allotment located north of the BLM managed lands.

Hailey Creek Allotment: Hailey Creek generally has about 95 out of 368 AUMs used (26%), since 1991. Grazing use occurs by up to four bands of sheep. Grazing is allowed from May 15th through November 30th, but use generally occurs in mid June to mid July and again in early September to mid October.

3.3.3 Invasive Non-native Species.

The Fuels/vegetation inventory conducted in 1999 through 2001 did not measure or observe any noxious weeds or cheatgrass within the foot print of the proposed treatments. However, invasive and non-native species are known to occur in areas throughout the Quigley and Hailey Creek allotments. Species that have been observed are diffuse knapweed, spotted knapweed, Canada thistle, and cheatgrass. Spotted and diffuse knapweed occur primarily along the main roadways in both allotments, Canada thistles occurs in small isolated areas along riparian areas, and cheatgrass has been observed on south slopes within the allotments. Currently, the BLM and Blaine County have active programs to control diffuse knapweed, spotted knapweed, and Canada thistle which are all listed on Idaho's noxious weeds list.

3.3.4 Vegetation including special status species

The vegetation communities exist in the areas as a mix of sagebrush steppe and forest communities, with the predominate vegetation being sagebrush steppe. The forest communities are scattered across the area on north aspects and in other locations where topography and soils provided for higher amounts of soil moisture. On BLM managed lands there is a total of 300 acres of Dry Douglas-fir communities within the project area and approximately 1,100 acres in surrounding watersheds. In addition to BLM managed lands, areas of private, Idaho Department of Lands (IDL), and Forest Service lands also have these communities within adjacent watersheds. The Douglas-fir communities within the BLM lands all have primarily the same characteristics. These stands are dominated by mature 90-110 year old trees with an average basal area of 90 square feet per acre, an average DBH of 13.5 inches, and an approximately 100 trees per acre. There is little understory vegetation in these stands. The primary understory species are pine grass (*Calamagrostis rubescens*), elk sedge (*Carex geyeri*), and scattered Rocky Mtn. maple (*Acer glabrum*). These characteristics are of established conifer stands, but there are also areas of younger conifers encroaching outside of these established stands into the sagebrush steppe communities and aspen communities. Currently, there is approximately 150 acres of aspen communities with encroaching conifers on BLM managed lands within the project area. These areas, like the Douglas-fir communities, are also represented on hundreds of acres on adjacent watersheds. These aspen communities, depending on the severity of the conifer encroachment, will have greater diversity then the Douglas-fir communities. In these communities canopy cover ranges across the project area from 20 to 60%; the overstory cover is composed of Douglas-fir, live aspen, aspen snags, and tall shrubs such as chokecherry (*Prunus virginiana*), Scoular willow (*Salix scoularina*), serviceberry (*Amelancheir alnifolia*) and Rocky Mtn. maple. Understories within the project area have forb cover that varies from 6 to 24%; the

primary forbs are sweet-cicely (*Osmorhiza chilensis*), paintbrush (*Castilleja spp*.), stinging nettle (*Utica dioica*), and Solomonseal (*Smilacina spp*). Grasses and sedges cover 24 to 50% with the primary species being pine grass, blue wild-rye (*Elymus glaucus*), mountain brome (*Bromus marginatus*), elk sedge, and onion grass (*Melica bulbosa*). Shrubs compose 16 to 25% of the understory with a species composition similar to shrubs in the overstory plus mountain snowberry *Symphorcarpos oreophilus* and wild rose (*Rosa woodsii*).

Two BLM Sensitive plant species have potential habitat within the proposed project area. These BLM Sensitive plants are discussed below.

Obscure phacelia (*Phacelia inconspicua*): Obscure phacelia is an erect-stemmed annual that grows primarily on north- or east- aspects in sagebrush, aspen, or mountain shrub communities at approximately 5000 to 8000 feet elevation. This species flowers in June and July. It often grows in rocky or bare sites that are lacking in other vegetation, and in areas that are disturbed by deer or elk, or areas that hold snow drifts late into the season. Soils are often loose, cindery, or sandy and rich in organic matter. Associated species include snowberry, quaking aspen, chokecherry, big sagebrush, western waterleaf, annual pink phlox, and bedstraw.

Obscure phacelia is known from the NPS-managed area north of U.S. 20/26/93 in Craters of the Moon, and Pratt Butte and Big Southern Butte in the Idaho Falls Field Office. There is considerable habitat for this species in the foothills of the Pioneer Mountains.

Threats to obscure phacelia include activities that cause permanent modification of the soil surface, e.g. mining activity or other types of excavation. This is an annual species that appears to require some disturbance (e.g. wildlife trailing) or tolerates little competition from other plants.

Least phacelia (*Phacelia minutissima*): Least phacelia is a dwarf, branching annual that grows in ephemerally moist, bare-soil areas of riparian zones and meadows in sagebrush-steppe and lower montane forest at approximately 4000 to 8100 feet elevation. Many sites are seepage or snow accumulation sites. This species blooms in July. Populations occur in association with false hellebore (*Veratrum californicum),*Quacking Aspen, Willow species *(Salix spp).,* Sedge species *(Carex* spp.), lambs tongue ragwort (*Senecio integerrimus),*mule-ears *(Wyethia amplexiculis),* knotweed *(Polygonum kelloggii),*tiny trumpet *(Collomia linearis), Veronica biloba, Nemophila breviflora,* mountain tarweed *(Madia glomerata), Navarretia breweri,* Douglas knotweed *(Polygonum douglasii),* maiden blue-eyed mary *(Collinsia parviflora), bedstraw (Galium aparina),* desert parsley *(Lomatium spp).,* owls clover (*Orthocarpus luteus),* clover *(Trifolium cyathifolium),* chickweed *(Stellaria longipes),* popcorn flower *(Plagiobothrys scouleri), Floerkea proserpinacoides, Gilia capillaris,* bluebells *(Mertensia ciliate), Perideridia gardneri,* slender cinquefoil *(Potentilla gracilis),* sticky cinquefoil *(P. glandulosa),* and twinleaf (*Arnica soraria).*

Least phacelia is known from the Timmerman Hills near McHan Reservoir. There is considerable potential habitat throughout the northern half of the Shoshone Field Office, especially in areas abutting the Sawtooth National Forest.

Threats to least phacelia include activities that cause permanent modification of the soil surface, e.g. mining activity or other types of excavation. While it appears that this species requires some disturbance to reduce vegetative competition, it does not tolerate disturbance from heavy use.

3.3.5 Soils

The primary soil type within the project area is Friedman-Elksel-Windridge soil complex. However, within this complex there are inclusions of Smelter Loam and Ketchum soil types. It is within these inclusions that the majority of the proposed and alternative actions will take place. Smelter loam is classified as a very deep, well drained loamy soil with a parent material of residuum and alluvium derived form andesite, latite, and welded tuff. Within the project area this soil type is capable of supporting trees where they receive supplemental moisture from springs and where topography and aspect facilitate maintaining higher levels of soil moisture. The Ketchum soil type is another soil type where the proposed and alternative actions may take place. Ketchum soil is classified as a very gravely loam that is very deep and well drained. Its parent material is colluvium derived from quartzitic sandstone and related rock. The dominant vegetation of the potential natural plant community is Douglas-fir and mountain snowberry; however, there are also areas of aspen present on these soils.

Currently, the soils within the footprint of proposed treatments are relatively undisturbed and have intact soil layers. Areas that have aspen as the main component in the overstory tend to be covered with a productive understory that contributes to a thick organic layer and protection from erosion. Areas dominated by conifers tend to have a less productive understory, but still have a relatively thick layer of litter and duff. Conifer dominated sites also tend to have more established game trail systems where soils are compact and litter and duff are removed exposing mineral soils. Within the footprint of the proposed treatments there are no designated recreation trails, roads, or other infrastructure that impact soils.

3.3.6 Air Quality

The Wood River Valley airshed is comprised of relatively clean air. Nevertheless, when stable air allows for inversion conditions to occur, particulate pollutants originating from agricultural operations, wildfires, and wood burning stoves can become trapped in the valley for as long as two weeks. Normally, inversion conditions will only last a few days and are strongest in the winter months. For the most part the air throughout the region is refreshed as high and low pressure systems move through the area causing windy conditions. Additionally, adiabatic winds also allow for air to clear on a daily basis when heated air raises allowing pollutants to be dispersed by trade winds.

No Class I or Class II airsheds exist within the project area. The closest Class I airsheds are the Sawtooth Wilderness Area and the Craters of the Moon Wilderness Area which are approximately 62 miles northwest and 31 miles southeast, respectively. The remaining amount of the Craters of the Moon National Monument is a Class II airshed.

3.3.7 Fuels and Fire Management

Fuels and vegetation inventory conducted from 1999-2000 and analyzed following protocol described in the Fuels Inventory/Monitoring Metadata determined that the majority of the Aspen/Conifer and Dry Douglas-fir communities were categorized as either having a high or extreme fire behavior hazard. The main reason for these high hazard rankings is the existence of

ladder fuels and potential for crown fires coupled with areas of high fine and coarse woody debris loadings. Although fire behavior is potentially hazardous there has not been a recorded fire within the project areas since 1968 and there has only been a recorded total of 88 acres burned. The project area currently has a high priority for suppression due to WUI areas, crucial wildlife habitat, and high recreation values.

4.0 ENVIRONMENTAL EFFECTS

4.1 Introduction

This chapter contains a discussion of the direct, indirect, and cumulative effects for the proposed action and alternatives. Direct effects are those that occur immediately in the area where the action is implemented, whereas indirect effects are those that occur later in time or are spatially removed from the area where the action is implemented. Cumulative effects are defined as effects on the environment which result from the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7).Also included in the discussion are the adverse environmental effects which cannot be avoided, the relationship between short-term uses and long-term productivity, and any irreversible or irretrievable commitments of resources involved with the proposed action and alternatives.

This EA is tiered to the FMDA, Final Environmental Impact Statement (FEIS) as it relies on environmental effects analysis completed in chapter 4 of that document in addition to the analysis given here. The FMDA, FEIS contains information about activities and subsequent potential impacts associated with amending 12 existing land use plans within the planning area to incorporate fire, fuels, and related vegetation management direction that is consistent with the Federal Wildland Fire Management Policy. The Proposed Plan Amendment would do this by returning the vegetation communities in the planning area to historic fire regime characteristics wherever possible.

4.2 Direct and Indirect Effects

This section compares the direct and indirect effects of the alternatives on affected resources. Effects of the Proposed Action (Alternative A) will be discussed first, followed by other action alternatives (Alternatives B and C) and the No Action Alternative (Alternative D).

4.2.1 Alternative A – Proposed Action

4.2.1.1 Wildlife

Within the project area, there are some riparian areas with less slope than the surrounding hills which could provide suitable breeding and brood rearing habitat for sage-grouse. Thus, birds from the adjacent active leks could migrate to and utilize habitats within the project area. However, because the footprint of the treatments of the proposed actions would be confined to forested ecosystems and not the surrounding sagebrush steppe communities the treatments described in the proposed action would be beneficial to sage-grouse. This is because ultimately all of the treatment types would open the understory of aspen communities enhancing brood rearing habitat by creating more space and an increase in forbs used as sage grouse forage.

Bald eagles that forage in the area would likely benefit from the treatments described in the proposed action. With the treatment areas more open and the higher diversity associated with aspen stands, the eagles would likely have increased forage.

Both resident and migratory birds utilize the area extensively. Impacts on bird species would occur if nesting trees are taken; additionally, any 'take' of a migratory bird is prohibited by the Migratory Bird Treaty Act. A pre-treatment clearance along with the stipulation in the proposed action that snags with obvious wildlife use are left will likely eliminate this potential to remove nesting trees. The result of the treatments would maintain aspen communities on the landscape providing birds with areas to nest and forage. It is well documented that riparian habitats (including aspen stands) are associated with a greater diversity of avian species. Additionally, where only pockets of the habitat type are available, they are used to a greater extent by migrating birds during stopover to rest and refuel.

The proposed action would not result in a large impact on mule deer and elk habitat; but, they may have marginally limited movement and access to the forage in the areas where timber is lopped and scattered. Although a portion of the area is crucial year round habitat for mule deer and elk, the actions are taking place on such a small percentage of the land that amounts of habitat changes will not reduce these animals survival. Furthermore, as aspen regeneration will be enhanced, and understory grasses and forbs increase the result would be a slight increase in late fall and early winter forage.

4.2.1.2 Livestock Grazing

The proposed action would have minimal impacts on the current livestock grazing within the Quigley and Hailey Creek allotments. Minor impacts to grazing would be in the form of down woody debris prohibiting normal movement of livestock through treated areas and not being able to use the approximate 5-acre areas enclosed by buck and pole fence or the 2-acre area that is proposed for broadcast burning. These impacts would only be minor because the majority of the treated areas are not currently grazed now because forest vegetation is too thick and makes herding sheep difficult through these areas. The total area treated would only amount to 1.3% of the total allotment area. An approximately 5-acre area in the Hailey creek, currently surrounded by forested vegetation, would be restricted from livestock use until monitoring data shows that aspen is regenerating successfully and the fence is afflicted with damages by natural occurring events, e.g. wildfires or windstorms. It is estimated that the buck and pole fence would limit livestock use from 10 to 20 years. Additionally, the area proposed to be broadcast burned would be excluded from grazing for a minimum of 2 years or until monitoring data indicates that sufficient amounts of aspen regeneration are protected from livestock browsing and perennial understory species have recovered. Communication and coordination will be used to limit grazing on this burned area; this can be accomplished in annual grazing plans.

4.2.1.3 Invasive Non-native Species

As a result of the proposed action there would be an increased potential for invasive non-native species to become established in areas where there is soil disturbances that expose mineral soil. The portion of treatment areas where this amount of soil disturbance is possible is confined to approximately 90 acres and is shown in Figure 2, Figure 4, and Figure 5. These treatments

involve pile burning, use of prescribed fire, and moving pole sized trees across the soil surface; lop and scatter treatments (shown in Figure 1 and Figure 3) do not cause soil disturbances.

Although exposing mineral soil in these areas will increase the potential for establishment of invasive non-native species, inventories and field observations did not measure or note the occurrence of these species within or nearby the footprint of proposed treatments which lessens the potential for establishment. Additionally, because of microclimates and existing vegetation the proposed treatment areas will generally recover quickly from such disturbances and it is likely that on site native species will become established prior to invasive non-native species. Furthermore, in the event that invasive non-native species are noted during monitoring they will be treated following procedures described in the *Final Programmatic Environmental Impact Statement Vegetation Treatments using Herbicides on Bureau of Land Management Lands in 17 Western States (2007)* while populations are small.

4.2.1.4 Vegetation including special status species

Impacts to vegetation in treated areas will come from a change in vegetation structure and a reduction in competition. Within lop and scatter areas shown in Figure 1 removing the conifers will reduce the amount of competition to aspen and understory vegetation. This will allow these areas to maintain their high species diversity and provide areas that continue to be resilient to wildfires and other natural or anthropogenic disturbances. Within the areas shown in Figure 2 where mature conifers will be felled, piled and burned the direct impacts will differ from lop and scatter areas, but the end result will be similar in that these areas will increase early successional species and will favor diversity in forest structure that maintains a higher level of resiliency to disturbances. The difference in the direct impacts will mainly come from the pile burning. Pile burning will cause mortality in portions of the remaining aspen canopy, will reduce litter and duff layers, and will release nutrients into the ecosystem. The net result will be an increased amount of new aspen regeneration (Sheppered, et al 2006). The removal of conifers around isolated aspen within conifer stands shown in Figure 3 will have a minimal direct impact on species diversity or structure diversity but it will indirectly aid in maintaining the function of the stand with future disturbances. However, it may provide new regeneration and more importantly will prevent the mature aspen from being suppressed and removed from the stand structure (Sheppered, et al 2006). Maintaining the occurrence of aspen within the stand will, in the event of a wildfire, allow historical successional patterns to continue where aspen establishes a forest structure relatively soon after a disturbance.

The vegetation in areas shown in Figure 4 and Figure 5 will incur the most change of treated areas. The small isolated areas of aspen surrounded by conifers shown in Figure 4 will have impacts similar to the impacts discussed for lop and scatter treatments, but the conifer areas identified to be thinned will also be impacted. Within the thinning area the suppressed and intermediate trees will be removed from the lower portions of the canopy. This will increase interspaces within the canopy freeing up space and limited resources for the remaining trees. The thinning treatment will provide an opportunity to sanitize the stand by removing trees with dwarf mistletoe. The outcome of the thinning will be an increase in tree production resulting in healthier individual trees and a stand that will be more resilient to disease and insects. The stand will also have a greater resilience to wildfire as a fire is more likely to burn in the understory reducing smaller less fire resistant trees and will be less likely to become a sustained crown fire

that would have wide spread tree mortality. The aspen stand shown in Figure 5 would have the declining overstory trees felled and then the 2-acre area would be broadcast burned. This treatment would remove the majority of the vegetation within the 2-acre area immediately following the burn. Within the next growing season the vegetation will begin to reestablish the area by sprouting from existing roots and by seeds from the seed bank. A similar treatment accomplished in 2003 within the Shoshone Field Office was measured as having 62% ground cover within a year after the burn, which was only 16% less then measurements prior to the burn. Monitoring data also showed an increase in aspen regeneration within the first year as well, although this aspen stand was shown to initially have a productive overstory. Even though the aspen identified to be treated in Figure 5 has been identified to have a declining overstory it is expected that the treatment will increase suckering in areas 30 to 45 feet away from existing aspen stems, this includes the adjacent aspen with an intact overstory (Sheppered, et al 2006).

Obscure phacelia and least phacelia, BLM special status plant species, have potential habitat within the footprint of the proposed actions treatments. Pre-treatment site clearances would be conducted to determine the actual presence of either species. In areas where these species have been determined to be present treatment activities would not be implemented where they would impact seed beds and would occur after the plants have flowered; approximately May through July. Furthermore, because both species are diminutive annuals that require some level of disturbance to create openings in the overstory vegetation and bare mineral soil to establish and persist the proposed project would create habitat for these species within a 90 acre area shown in Figure 2, Figure 4, and Figure 5 (FMDA, pg 4-67)

4.2.1.5 Soils

Impacts to soils would occur as a result of burning woody debris and moving pole sized trees across the soil surface. The areas where burning would impact soils would be restricted to areas within the 45-acres shown in Figure 2 and Figure 5. Soil responses to burning can range from an increase in nutrient availability in low to moderately severe fires to a loss in soil nutrients, microorganisms and a change in physical characteristics with high severity fires. The impacts to soils depend on physical soil characteristics, soil moisture content, fuel loading, and burn duration. It is recognized that burning areas with high fuel loading such as slash piles provide intense heat penetration at levels that can volatize nutrients, kill soil fungi and bacteria, cause hydrophobicity, and can also kill aspen roots (Shepperd 2004). However, when soil moistures are high, peak soil temperatures and heating duration are significantly reduced which reduces direct impacts to soils (Hartford and Frandsen 1992, Busse, et. al. 2004). Additionally, it has been demonstrated that adequate aspen suckering can be achieved after burning slash if adequate soil moistures are maintained (Shepperd 2004). So, even though there is a possibility for soil damage caused by the proposed pile burning, burning the piles after the fall rainy season provides moisture reducing the overall impacts and maintaining vegetation, nutrients, and soil microorganisms.

Impacts to soils are possible within a 50-acre area shown in Figure 4 from the moving of pole sized logs across the soil surface in the area that is designated to be thinned. Within the thinned areas the majority of buck and pole fence material will be moved by hand; however, some of this material will be more efficiently moved by a chainsaw mounted winch. This would result in scarifying areas of the forest floor exposing mineral soil and slightly increase the chance of soil

erosion from runoff. Although, the soil within the proposed treatments footprint has a high erosion probability it also has been classified as well drained with moderately rapid permeability (Johnson 1991). In addition to the drainage and permeability classifications other environmental factors will be in place to reduce the chance of any soil displacement. One of those factors is the presence of canopy cover over the soil surface. Canopy cover of mature trees will remain in place within the area to be thinned, so even though mineral soil will be exposed under the forest canopy, interception from the canopy will prevent rain from impacting the exposed area. Also, there is over 1,000 feet of buffering vegetation between the thinning area and the nearest intermittent stream with most of the thinned area being greater than 2,000 feet away from any stream. This would allow for any runoff that did occur as a result of the increased soil exposure to be absorbed before reaching the stream course. Furthermore, techniques such as yarding materials across slope rather than up or down slope and maintaining diverging trails will also ensure erosion is kept within normal limits.

4.2.1.6 Air Quality

Impacts to air quality as a result of the proposed action would occur from using fire to remove piled conifers and to promote aspen regeneration. These unavoidable impacts would occur as short periods of haze and a decrease in localized air quality. However, the smoke emissions that result because of the use of fire as described in the proposed action would be relatively minor and because of the treatment locations and normal wind directions these emissions would not likely impact populated areas. Air quality would be further protected by following the Management Restrictions described in Appendix Q of the FMDA (2008). The management restrictions concerning air quality state "All fire activities on BLM-administered lands would be coordinated with the Montana/Idaho Airshed Group Smoke Management Program. Under this program, RxFire and WFU could be restricted when regional or local air quality is compromised, or if the project would negatively affect visual quality in Class 1 Airsheds (Yellowstone and Grand Teton National Parks, Bridger Wilderness, Sawtooth Wilderness, and Craters of the Moon Wilderness), Non-attainment Areas, and sensitive receptors" (FMDA, 2008).

4.2.1.7 Fuels and Fire Management

The implementation of the proposed action would change the fuel structure within all treated areas. Lower canopy and understory conifers that would be lopped and scattered, piled, or used for buck and pole materials would be removed from aerial fuels and added as surface fuels. This would decrease the potential for crown fires and would temporarily increase fire behavior and fire severity. These temporary increases in fire behavior and fire severity would last until piled fuels are burnt and/or until scattered fuels loose dried needles and begin to break down. Burning piled areas would reduce the overall fuel loading and therefore reduce the increase in fire behavior and severity caused by the increase in surface fuels. Treatment areas where conifers are lopped and scattered would not decrease the overall fuel loadings and the fuels would be added to the surface fuel profile. However, the addition of these fuels to surface fuels would be a minor amount compared to the annual production of grasses, forbs and shrubs that are added to the surface fuels each year.

The impacts to fuel loadings have been demonstrated by past treatments within the Twin Falls District BLM. The treated areas were forest communities where conifer stands were thinned to approximately 40 to 50 square feet of basal area per acre (this is substantially more than

proposed in the proposed action) and conifers were lopped and scattered in the understory of apsen stands. The monitoring data showed that one to three years after the area was thinned there was an average fuel loading of 7.9 tons/acre for 1-hour, 10-hour, and 100-hour fuels. This is approximately a 3 to 5 ton/acre increase from untreated areas, but crowning and torching potential is decreased and the fire intensity and rate of spread would either remain the same or only slightly increase. Extrapolating this information to the proposed lop and scatter treatment areas, it is expected that there will be a one-time addition of 3 tons per acre of coarse woody debris resulting in an increase in fire intensity as compared to if the conifers were not removed. This increase would last until the woody debris created by the treatment decomposed.

4.2.2. Alternative B – Broadcast Prescribed Fire across Mechanically Treated areas.

4.2.2.1 Wildlife

The impacts to wildlife that would occur due to the treatments described in Alternative B would be essentially the same as those described under the environmental effects of the Proposed Action. Additionally, impacts are also discussed regarding effects of prescribed fire in the FMDA. Analysis given in the FMDA acknowledges that there would be some displacement of wildlife during prescribed burning treatments and would also result in a loss of nesting habitat where fire intensity is higher. However, analysis in the FMDA also identifies high and low intensity burning to be beneficial to wildlife rejuvenating understory vegetation and by maintaining openings within forested communities.

4.2.2.2 Livestock Grazing

The effect of Alternative B to livestock grazing would restrict grazing on 1% of BLM managed land in the Quigley Allotment and 7.5% of BLM managed land in the Hailey Creek Allotment for a minimum of 2 growing seasons or until monitoring data indicates that sufficient amounts of aspen regeneration are protected from livestock browsing and perennial understory species have recovered. Sheep grazing will continue in the allotments outside the treated areas. Fencing will not be needed because herding techniques will be used to avoid treated areas. Communication and coordination will be used to limit grazing on this burned area.

4.2.2.3 Invasive Non-native Species

As a result of implementing Alternative B areas would have vegetation reduced and mineral soil exposed. This would increase chances for the introduction of invasive non-native species on portions of the 250-acre burned area. Areas where fire behavior is more intense removing greater amounts of the biotic component from the soil will provide greater opportunities for invasive species introduction. However, because ignitions will be controlled and a burn plan identifying environmental parameters such as fuel and soil moisture, weather conditions, and ignition patterns areas that will burn at high intensities will be minimal. Additionally, the areas that will be burned are on north and northeast aspects where native vegetation communities are intact and are likely to have native herbaceous cover within the next year allowing for an inherent amount of protection from invading weeds. Furthermore, monitoring will be established to identify and treat any weeds that invade the treated area.

4.2.2.4 Vegetation including special status species

The impacts to vegetation communities, including both special status specieis, resulting from the implementation of Alternative B would be similar to the proposed action except that the impacts of burning would be distributed across all of the treated area rather than a small portion. Because the prescribed fire would be applied across a larger area the forest and adjacent sagebrush steppe community's structures would exhibit diversity on more of a landscape level rather than at a stand level. The diversity in vegetation structure across the landscape would have attributes closer to what the area would have historically (FMDA 2008). The treatments would increase the amounts of early seral areas in aspen and mountain sagebrush communities and would increase mid seral Douglas-fir communities with an open canopy. On the landscape as a whole, aspen would cover a higher percentage of the area then occurred prior to burning and would also have higher amounts of regeneration.

4.2.2.5 Soils

The implementation of Alternative B would impact soils by removing vegetative cover and in some areas possibly removing some of the soil organisms. These impacts would be primarily caused by the use of prescribed fire. The initial removal of vegetation cover would temporarily increase soil erosion, but as the purpose of these treatments is to increase vegetation health and structure diversity it is expected that soil erosion would decrease as vegetation is reestablished within the next 1 to 2 years. The FMDA recognizes that there would be an increase in soil erosion, but also identifies that allowing fire to occur under controlled conditions allows sensitive areas to be avoided.

4.2.2.6 Air Quality

The impacts of Alternative B to air quality would be essentially the same as is discussed in the proposed action, with the main difference being a larger quantity of smoke being produced. As there would be a larger quantity of smoke produced the burn plan will emphasize smoke dispersal in the selection of weather prescriptions.

4.2.2.7 Fuels and Fire Management

The impacts of Alternative B to fuels and fire management will be more pronounced than all other alternatives as it calls for the use of fire to be used as a tool to shape vegetation communities as it historically has. As in the proposed action the surface fuel loadings will temporarily increase, however unlike the proposed action these fuel loadings will be reduced after the area is burned. Broadcast burning will remove a portion of the increased fuel loading , but as the planned fire behavior will be mixed severity a portion of the newly felled material, particularly the larger fuel sizes, will remain as coarse woody debris. After the prescribed fire, there initially will be a reduction in the total surface fuel loading and to a lesser extent aerial fuels. Then vegetation communities will begin to reform and within 70 to 90 years are expected to develop fuel loadings similar to pre-treatment levels.

As the vegetation communities begin to reform, particularly aspen communities, the chances of them burning is reduced compared to pre-treatment conditions or to that of any of the other alternatives. The presence of moist forbs and grass and the lack of woody shrubs and conifers under normal conditions reduce the movement of fire through aspen communities, which often

times have acted as fire breaks. Additionally, future fires in these aspen communities will be less intense and easier to control.

4.2.3 Alternative C- Mechanical Treatments without the Use of Broadcast or Pile Burning

4.2.3.1 Wildlife
The impacts to wildlife that could occur due to the treatments described in Alternative C would be essentially the same as those described under the Proposed Action. The increase of coarse woody debris would restrict wildlife movement in some of the treated areas.This impact would be offset by the increase in surrounding understory forage, and animals would benefit shortly after the treatment.

4.2.3.2 Livestock Grazing
The impacts to livestock grazing would be the same as in the proposed action.

4.2.3.3 Invasive Non-native Species
Alternative C would differ from the proposed action in that only the areas within the 50 acres shown in Figure 4 will have areas of exposed mineral soil that would facilitate an increase in potential for the spread of invasive non-native species.

4.2.3.4 Vegetation including special status species
The impacts would be similar to that discussed in the proposed action. The differences in the impacts would be less recruitment of new aspen regeneration and there would be higher possibility for suppressing current vegetation with the increase in coarse woody debris. Additionally, fewer areas would be available for the establishment of Obscure phacelia and least phacelia.

4.2.3.5 Soils
As with the invasive non-native species the only area that would still occur notable impacts would be the area in Figure 4, where thinned trees area being moved to provide material for buck and pole fences. The impacts of moving this material are discussed in the impacts of the proposed action.

4.2.3.6 Air Quality
Air quality is impacted within the other alternatives as a result of burning. Alternative C excludes the use of burning and therefore would have no impacts to air quality.

4.2.3.7 Fuels and Fire Management
Alternative C would have similar impacts to fuels and fire management as the proposed action with the exception that activity fuels that would be piled and burned in the proposed alternative would be left on site in Alternative C. This would result in an increase in fuel loadings until they decay or are removed by other natural means i.e. wildfire. Additionally, the higher fuel loadings in these areas would lead to increased resistance to fire suppression and higher severity fire effects then if they were burned under prescribed conditions.

4.2.4 Alternative D- No Action

4.2.4.1 Wildlife
Wildlife would continue to use the project area as they currently do adjusting to changes in habitat that would occur as a result of succession and/or wildfire.

4.2.4.2 Livestock Grazing
Grazing would continue to occur as it is outlined in the current permit.

4.2.4.3 Invasive Non-native Species
The populations of non-native species that already exist within the project area will likely continue to exist. However, the noxious weed populations that exist on public land will continue to be treated by programmatic weed treatments.

4.2.4.4 Vegetation including special status species
As more of the communities continue on with succession they become more homogenous on the landscape with less diversity in structure. Aspen areas currently with only small amounts of understory conifers will become overtopped and begin to become less productive and provide less species (plants and animal) diversity. Aspen communities that already have conifers dominating the overstory will not be able to compete for light, nutrients, and water and will be lost on the landscape without the occurrence of a disturbance.

In the absence of wildfire, aspen communities will continue to be encroached on by conifers until aspen have been suppressed along with productive understory vegetation. Given the current condition of aspen, the longer the interval between a wildfire event or other mitigating treatments the less likely aspen will return in areas it once occurred as a seral species. The absence of disturbance will have even more of an impact to obscure phacelia and least phacelia, as these species are already limited in their extent and re-establishment capability.

4.2.4.5 Soils
There would be no direct impact to soils under this alternative.

4.2.4.6 Air Quality
There would be no increased impact to air quality under the no action alternative.

4.2.4.7 Fuels and Fire Management
Fire management would continue as described in the FMP (2005) and the FMDA (2008) where fires are suppressed and emergency stabilization and rehabilitation are conducted as needed. However, the changing vegetation structure that would occur in the absence of wildfire would increase the probability of crown fires that would require different strategies for suppression and post fire treatments.

4.3 Cumulative Effects Analysis
Cumulative effects are those effects resulting from the incremental effects of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions that take place over a period of time.

4.3.1 Past and Present Actions

Actions that have occurred or are currently occurring in areas adjacent to the proposed treatments are 1) Approximately 150 acres of timber harvest on private lands in Quigley Creek in the 1980's, 2) 50 acres of prescribed fire and mechanical fuels reduction treatments in Big Dry Canyon in 2001-2003, 3) Commercial thinning on 660 acres in Martin Canyon occurring in 2004-2007, Generally these actions in combination with the proposed action and action alternatives contribute to meeting goals and objectives set by the FMDA (2008).Other passive actions (those actions that were not planned for but have occurred) such as wildfires and large areas of tree mortality caused by insect outbreaks have also shaped the vegetation dynamics in adjacent areas. Also the broader area is used for many aspects of recreation as well as livestock and wildlife forage.

4.3.2 Reasonably Foreseeable Future Actions

Actions that are likely to occur are 1) Proposed prescribed fire treatment within the commercially thinned areas of Martin Canyon for 2009- 2010, 2) proposed restoration treatments in Sharps Canyon to remove high levels of dwarf mistletoe and to remove encroaching conifer within aspen communities for 2011-2015, and 3) future programmatic noxious weed treatments.

4.3.3 Cumulative Effects

4.3.3.1 Wildlife

Alternatives A, B, and C have similar actions and impacts regarding wildlife and would have similar cumulative impacts. The combined result of treatments past, present, and future would improve habitat diversity across the landscape; providing habitat attributes e.g. increasing the variety of nesting habitats for migrating birds and the amount of deer and elk forage particularly in late fall and early winter. Alternative D (no action) would not necessarily result in the increase in habitat across the landscape; however, areas of past actions have already contributed to a local increase in wildlife habitat diversity.

4.3.3.2 Livestock Grazing

Alternatives A and C only impact grazing at a minor level by leaving down woody debris that impedes livestock movement in areas that are already difficult for livestock to use. This combined with past, present, and future actions would not have any cumulative impacts, as these alternatives do not limit the amount of area that would be available to livestock grazing further than what is limited without the implementation of the actions. Alternative B does impact the amount of area that would be available to livestock grazing until the areas have recovered. This reduction in available area is small (1% and 7.5% of Hailey Creek and Quigley allotments, respectively), but the recovery period is likely to overlap with the recovery period of the prescribed burn planed in Martin Canyon where similar livestock restrictions would occur. However, as the areas in the effected allotments that would be impacted are forested and currently have limits to livestock use because of issues with herding sheep through tall and dense vegetation the individual and cumulative impacts to livestock grazing would be minimal. Additionally, even minor impacts can be overcome by coordinating prescribed fire treatments with permitees that use multiple allotments impacted by vegetation treatments.

4.3.3.3 Invasive Non-native Species

Currently, programmatic weed treatments proactively treat noxious weeds within the project area and the surrounding areas. Additionally, other activities such as past wildfires, recreation uses, and livestock grazing may increase the opportunity for weeds to become established. Alternative A, B, and C would increase the opportunity for weed establishment on 90, 250, and 50 acres, respectively, across areas shown in Figure 2, Figure 4, Figure 5, and Figure 7. Where recreation activities and livestock grazing occur on the same areas there would be greater chance for weed establishment. However, as discussed in the direct impacts of Alternatives A and C livestock grazing is not likely to occur in these treated areas because of herding issues, also because of the thick vegetation and topography recreation activities would be limited to foot traffic in the treated areas. Therefore, the combination of activities within these areas is not expected to increase the opportunities of weed establishment over that already discussed in the direct impacts of the alternatives. Alternative B also reduces cumulative impacts in the treated areas by restricting grazing on burned areas until the vegetation has recovered. However, Alternative B would reduce vegetation cover increasing the chance of motorized recreation and potential weed introduction in a portion of the treated areas. All action alternatives also require monitoring and treatment of weeds within the treated areas. This, in combination with the current weed treatments, would result in an overall increase in weed treatment within the project area under all action alternatives.

4.3.3.4 Vegetation including special status species

The past actions that have occurred in forested vegetation in the surrounding areas have generally increased the amount of early and mid-open forest structures. This would also be the result of proposed and reasonably foreseeable vegetation treatments. These actions along with the implementation of the Alternatives A, B, or C would result in aspen communities having a distribution of age classes and structures that are closer to historical conditions across the landscape. Objectives set in the FMDA described a Desired Future Condition (DFC) that would create or maintain 40% of aspen communities at less than 30 years old, 40% at 30-50 years old with a mix of aspen and conifer and 20% at greater than 50 years old with a canopy dominated by conifer. The cumulative result of vegetation treatments would not meet the DFC, but would be closer to meeting that objective than current age/structure distributions do.

As obscure phacelia and least phacelia have areas of meeting habitat requirements in the majority of the areas where past, present, and future actions have been accomplished or proposed it is likely that the amount of habitat will expand as cumulative past, present, and foreseeable actions result in early seral aspen habitats such as the less than 30 year age class.

4.3.3.5 Soils

An increase erosion potential will occur 1 to 2 years after treatments have been implemented where broadcast fire has been used as a treatment option or where roads have been developed (as is the case with the past private timber sale). The amount of the increase would vary depending on the individual treatment and other physical/environmental factors. However, as these impacts are short term and the majority of the treatments occur within different watersheds during different times cumulative impacts would not occur.

4.3.3.6 Air Quality

The impact to air quality as a result of Alternative A and Alternative B is limited to isolated times when burning occurs and is described in sections 4.2.1.6 and 4.2.2.6 respectively. There are not any past, present, or foreseeable actions that would contribute additional impacts to air quality. However, if air quality is being impacted because of unknown actions outside the immediate area or because of uncontrollable events, such as a wildfire, then cumulative impacts would be mitigated by adhering to the Management Restrictions described in the FMDA (2008). The Management Restrictions require all burning to be coordinated through the Idaho/Montana Airshed Group so that air quality limit thresholds are not exceeded. The Idaho/Montana Airshed Group considers other smoke dispersal within the described area and weather conditions prior to making their recommendation for burning. Their recommendation is designed to maintain good air quality; therefore this coordination would effectively maintain cumulative impacts to air quality under threshold limits.

4.3.3.7 Fuels and Fire Management

The result of vegetation treatments accomplished, ongoing, and proposed would be a reduction in the total fuel loading and a change in fuel structures. Where prescribed fire treatments occur there would be less total fuels and younger vegetation would decrease the likelihood that the area would not burn in the near future. In areas where mechanical treatments are accomplished without the removal of the biomass there would be no large change in fuel loadings. However, there would be a change in the fuel structure that results in different fire behavior. Combining these results with areas that have not been treated on the landscape would result in wildfires that burn with different intensities and in mosaic patterns. Areas where fire intensities are lower can aid in fire suppression efforts as they can act as anchor points and also provide more options for suppression tactics.

5.0 Public Participation and Interdisciplinary Team Review

5.1 Summary of Public Participation

Issues identified in Chapter 1 were identified by interdisciplinary team members and public comments on past proposals. During the preparation of this EA the public was notified of the proposed action by posting on the Idaho BLM internet NEPA database in May 2008. A pre-decisional Environmental Assessment was made available for a 30-day public comment period starting February 12, 2009. The document was available for review on BLM's public web site or as a hard copy by request. The interested parties listed below have been contacted directly to inform them of the proposed treatments and to solicit input from them. During the comment period for the pre-decisional EA two of the interested parties commented.

One of the interested parties simply indicated that they thought removing conifers either by mechanical means or by fire would help. They also expressed that they didn't think that current grazing impacted aspen health and that aspen in adjacent have increased since 1957.

The other interested party had a list comments to consider that is summarized by the following: 1) "We suggest combining all three different proposed actions as part of the experimental design to determine which of the treatment methods are most effective."

2) “We… suggest that trees with a diameter of 24 DBH and greater are retained.”
3) “…. (W)e encourage the Shoshone Field office to re-incorporate fire into the system to the extent practical. … We do have concerns about negative impacts to soils from pile burning. …suggest that the BLM provide more detailed guidelines, quantify the necessary soil measures and ensure these conditions are met the day of any pile burning. As such, we suggest using broadcast burning with appropriate moisture conditions where practicable to avoid artificially high fuel loads.”
4) “We do have concerns about the toxicity of the chemical browse protection agent, Hot Sauce or Deer Away…”
5) “Management areas should only be re-opened after sufficient monitoring has been done to determine if aspen regeneration in the area can withstand trampling and grazing.”
6) “This monitoring should also include both pre-treatment and post-treatment noxious weed surveys for five years following implementation. … BMP should include washing off all equipment, pant cuffs, and boots before and after treatment…..”

Interested Parties Notified:

Denis Kowitz,
Lava Lake Land and Livestock, c/o Mike Stevens
Flat Top Grazing Association, c/o John Peavey
Blaine County Commissioners
Committee for the High Desert
ICL Public Lands Office
Idaho Department of Fish and Game
Idaho State Department of Agriculture, Division of Animal Industries,
Idaho Department of Lands
Idaho Wildlife Federation
Shoshone-Bannock Tribes
The Wilderness Society
Western Watersheds Project
David Skinner
Western Land Exchange Project
Paul McClain
Dennis Crane
Chris J. Christiansen
Del Pletcher

5.2 List of Preparer and Reviewers

Staff Specialist	Title	Initials	Date
Kasey Prestwich	Forester, Preparer		
Joseph Russell	Fire Ecologist	JR	12/29/08
Bonnie Claridge	Wildlife Biologist	BC	01/05/09

John Kurtz	Outdoor Recreation Planner	JK	12/18/08
Lisa Cresswell	Archaeologist/NEPA Coordinator	LC	12/22/08
Dan Patten	Rangeland Management Specialist	DP	12/22/08
Joanna Tjaden	Rangeland Management Specialist	JPT	12/9/08
Kathy Farrell	Planning & Environmental Coordinator	KF	12/22/08
Tim Fuller	Environmental Protection Specialist	TF	11/19/08
Doug Barnum	Supervisory Natural Resource Specialist	DB	01/22/09
Lori Armstrong	Field Manager	LA	02/12/09

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Appendix 1: Figures showing Maps and photos of designated treatment areas.
Figure 1- Areas where lop and scatter treatments are to be implemented with a picture of current conditions.

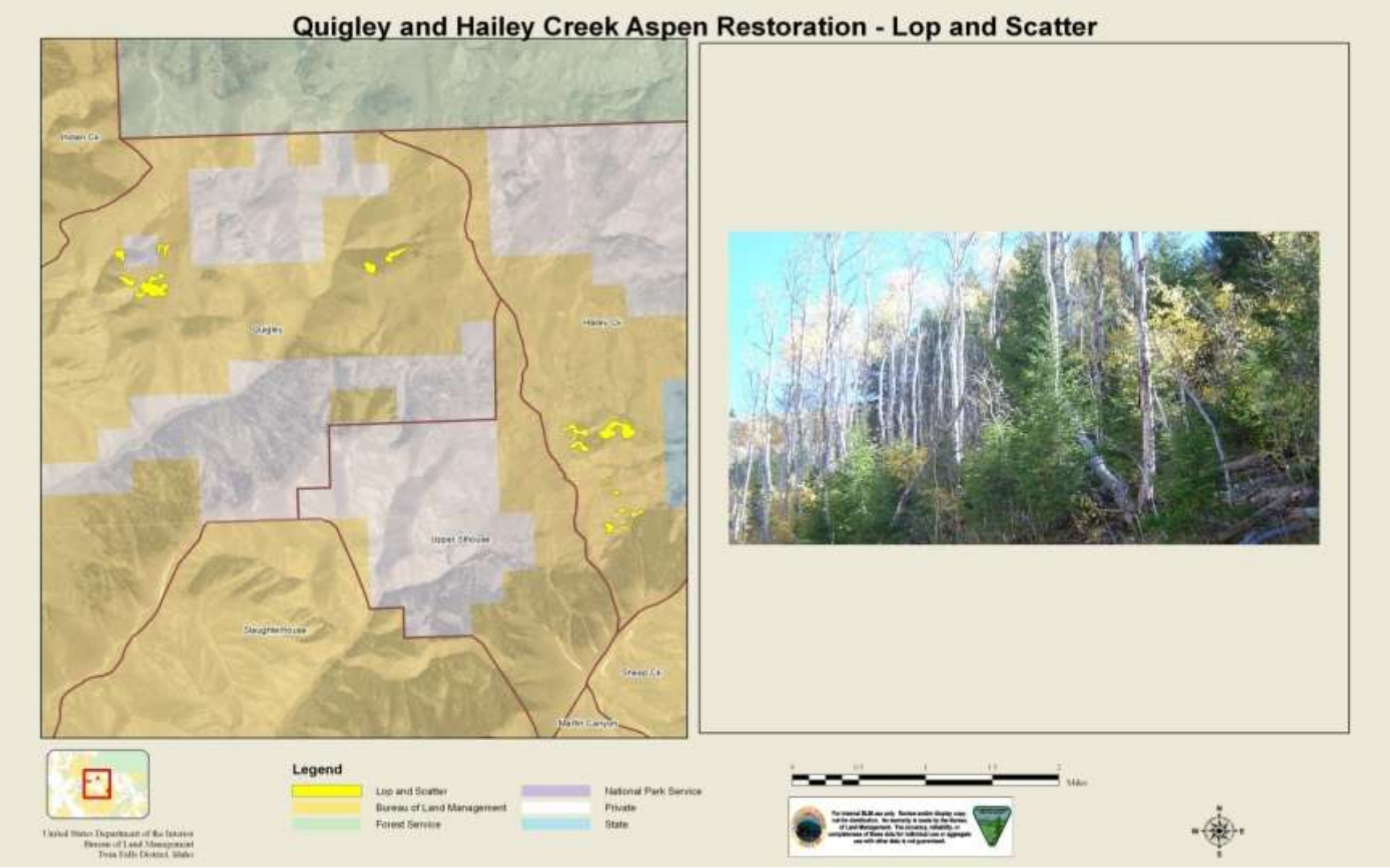

Figure 2- Areas where pile and burn treatments would occur and the current condition of those areas.

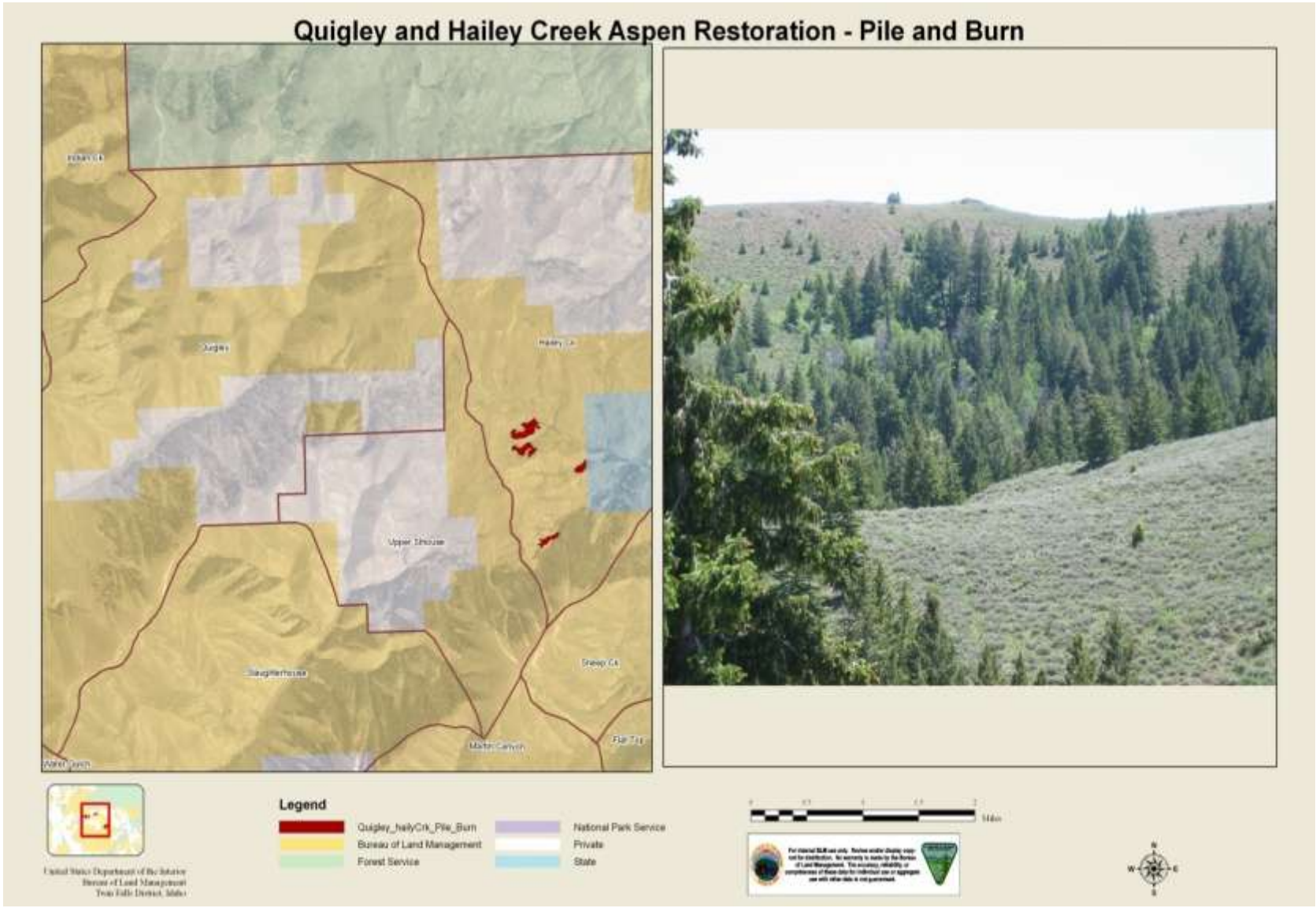

Figure 3- Areas that would be gridded to identify and maintain isolated aspen with a picture showing an example of current conditions that would result in conifer removal.

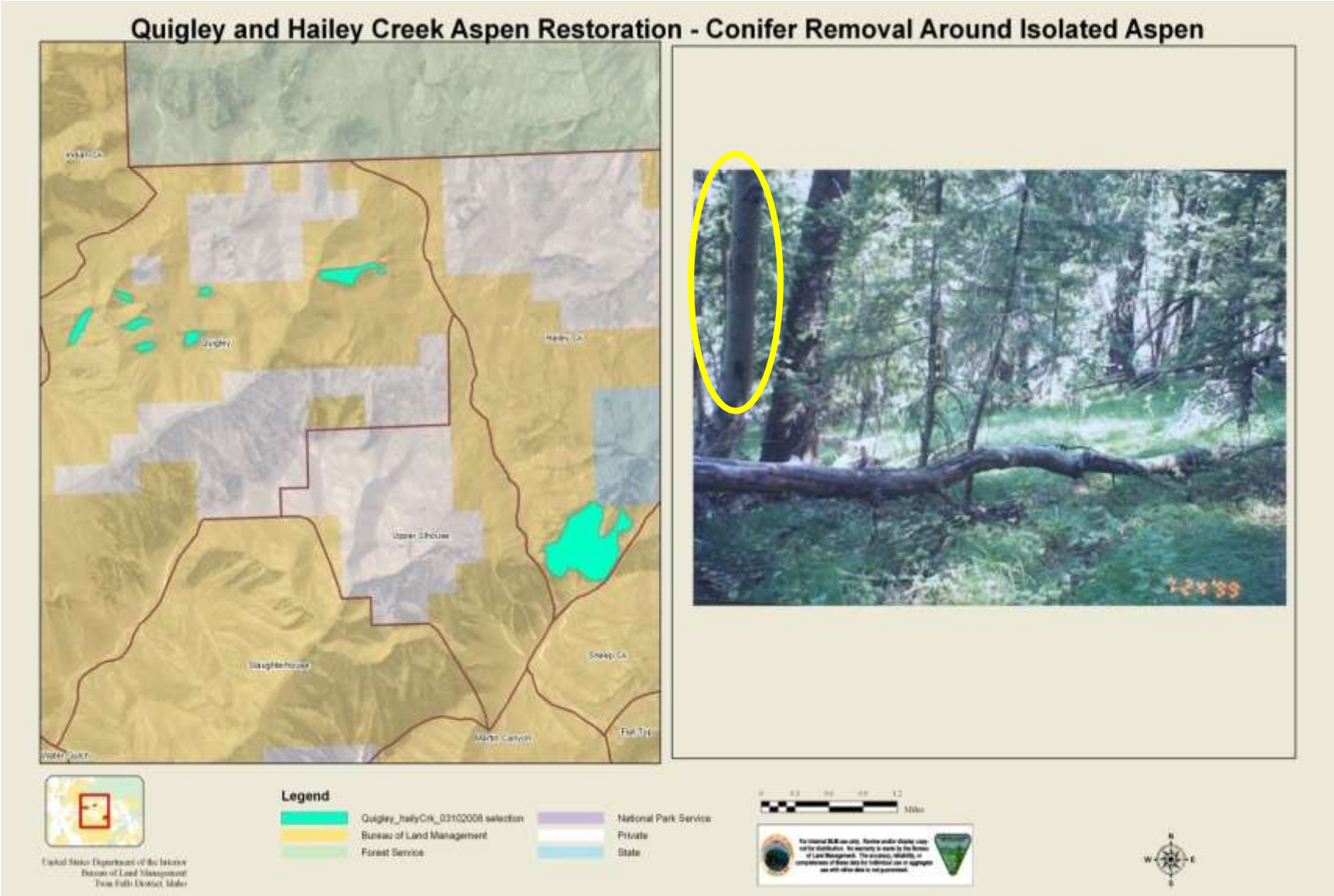

Figure 4- Areas with conifer removal, installation of protective fence, and understory thinning with a picture of the current aspen stand conditions.

Figure 5- An area that would have overstory aspen felled and be broadcast burned. Also, the regeneration would be protected with a repellent to prevent wildlife from impacting the success of the treatment.

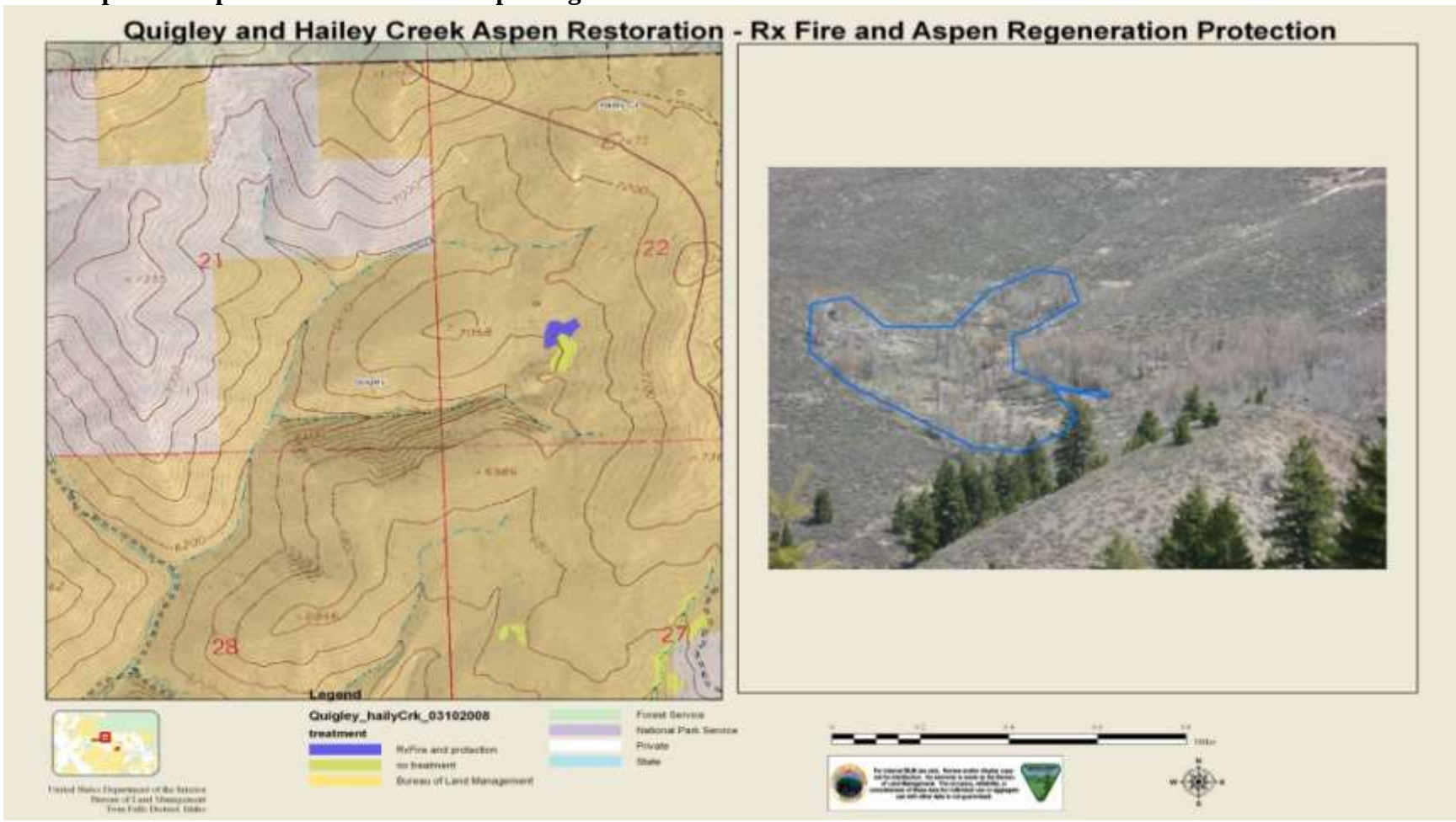

Figure 6- Identified in the map is areas of aspen that are relatively healthy and would receive no treatment under this proposal.

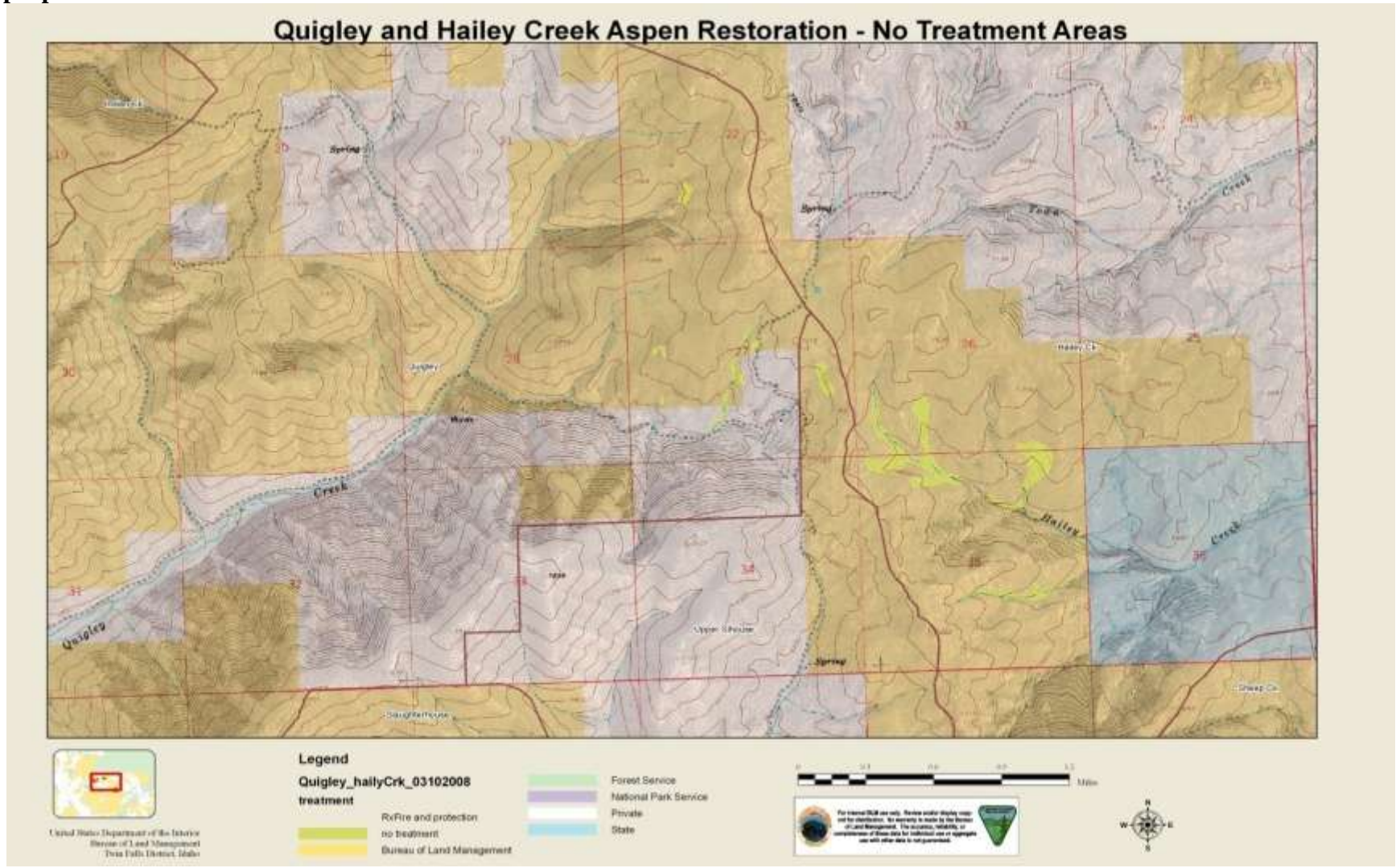

Figure 7 – This figure shows areas that would be treated under Alternative B. The light blue polygons represent areas that would be mechanically treated and the bold red lines represent areas where prescribed fire treatments would extend to.